

Date: Wed, 13 Oct 93 04:30:22 PDT  
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>  
Errors-To: Ham-Space-Errors@UCSD.Edu  
Reply-To: Ham-Space@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Space Digest V93 #54  
To: Ham-Space

Ham-Space Digest                      Wed, 13 Oct 93                      Volume 93 : Issue    54

Today's Topics:

                    ANS-275 BULLETINS  
            Archive for Satellite Info?  
            Weather Sat Info Needed  
            Where is the NASA type Sat Data?

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>  
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 3 Oct 93 04:58:28 GMT  
From: sdd.hp.com!saimiri.primate.wisc.edu!caen!destroyer!nntp.cs.ubc.ca!alberta!  
adec23!usenet@network.ucsd.edu  
Subject: ANS-275 BULLETINS  
To: ham-space@ucsd.edu

SB SAT @ AMSAT    \$ANS-275.01  
NEW CROP OF OSCARS ARE BORN!

HR AMSAT NEWS SERVICE BULLETIN 275.01 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.01

A New "Crop" of OSCARs On-Orbit

As a result of last week's successful launch of SPOT-3 on ARIANE mission  
V-59, (26-SEP-93 01:45 UTC) three, and possibly four, amateur radio  
satellites have been "born." Late this week, two were given the names

ITAMSAT-OSCAR 26 and AMRAD-OSCAR 27. The Portugese builders of POSAT are determining whether or not they will activate the amateur package on that otherwise commercial satellite. This is why there maybe three, or perhaps four amateur satellites. The AMSAT News Service (ANS) will carry additional information when available. At the time this bulletin went to press, the Korean builders of KITSAT-B have not yet designated it an OSCAR, although it is expected that they will do so shortly.

These new series of amateur radio satellites will ensure that radio amateurs will have reliable "store-and-forward" messaging capability for many years to come. Also, the imaging cameras on POSAT-1, if it is made available to amateurs, and KITSAT-B will provide many excellent images of the earth. To date, there has been no "official" announcement about the release of these satellites for general use. Each of the groups involved with the operation of their respective satellite are currently performing "engineering" check-outs. Please watch in the ANS bulletins for an announcement of the commencement of general amateur radio operations on each of these satellites.

The following table is a summary of the frequencies of each of these new spacecraft.

	UPLINK	DOWNLINK	BAUD
=====			
KITSAT-B	145.870 MHz	435.175 MHz	9600
	145.980 MHz	436.500 MHz	9600
ITAMSAT-OSCAR-26 (IO-26)	145.875 MHz	435.867 MHz	1200/9600
	145.900 MHz	435.822 MHz	
	145.925 MHz		
	145.950 MHz		
AMRAD-OSCAR-27 (AO-27)	145.850 MHz	436.800 MHz	300-9600
POSAT-1	145.925 MHz	435.250 MHz	9600
	145.975 MHz	435.275 MHz	

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SB SAT @ AMSAT \$ANS-275.02  
 MORE INFO ABOUT AMRAD-OSCAR-27

HR AMSAT NEWS SERVICE BULLETIN 275.02 FROM AMSAT HQ  
 SILVER SPRING, MD OCTOBER 1, 1993  
 TO ALL RADIO AMATEURS BT  
 BID: \$ANS-275.02

AMRAD Announces the Launch of AMRAD-OSCAR-27 (AO-27)

The Amateur Radio Research And Development Corporation (AMRAD) of McLean Virginia is proud to announce the launch and activation of a new Orbiting Satellite Carrying Amateur Radio (OSCAR) named AMRAD-OSCAR-27 (AO-27). Launch occurred at 01:45:00 UTC Sunday, 26-SEP-93 aboard the Ariane V-59 mission from the Guyana Space Center in Kourou, French Guiana. AO-27 was inserted into its orbit approximately 24 minutes later as one of seven satellites launched on this mission. AO-27 was activated on the next orbit as it passed over the command station near Washington, D.C., and was heard by AMRAD members throughout the area.

AO-27 is a secondary amateur communications payload carried aboard the EYESAT-1 commercial MICROSAT satellite built by Interferometrics Inc. of Vienna, Virginia. The amateur equipment aboard the satellite was constructed by members of AMRAD, a technically-oriented, non-profit organization of radio amateurs based in the Virginia suburbs of Washington, D.C., to meet the needs of amateurs for a platform to conduct digital satellite communications experiments. The payload is presently transmitting at 1200 bps AFSK on a frequency of 436.800 MHz on a part-time schedule during the on-orbit checkout and commissioning of the parent EYESAT-1 satellite. AMRAD members will be preparing information for future release on receiving and decoding telemetry from the payload and on the progress of their experiments.

AMRAD congratulates the KITSAT and ITAMSAT teams and the University of Surrey on the launch and activation of their satellites. AMRAD thanks AMSAT-NA for the technical support and encouragement they provided during construction and preparation of the AMRAD OSCAR payload. For further information about AMRAD and the AMRAD OSCAR-27 payload, please contact AMRAD at PO Drawer 6148, McLean Virginia, USA, 22106-6148, or call the AMRAD BBS in McLean, Virginia, at (703) 734-1387.

/EX  
SB SAT @ AMSAT \$ANS-275.03  
AMSAT OPS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 275.03 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.03

Current AMSAT Operations Net Schedule For AO-13

AMSAT Operations Nets are planned for the following times. Mode-B Nets are conducted on AO-13 on a downlink frequency of 145.950 MHz. If, at the start of the OPS Net, the frequency of 145.950 MHz is being used for a QSO, OPS Net enthusiasts are asked to move to the alternate frequency of 145.955 MHz.

Date	UTC	Mode	Phs	NCS	Alt NCS
9-Oct-93	1500	B	101	W9ODI	N7NQM
23-Oct-93	1315	B	154	WB6LLO	WA5ZIB
30-Oct-93	1300	B	62	W5IU	WB6LLO

Any stations with information on current events would be most welcomed. Also, those interested in discussing technical issues or who have questions about any particular aspect of OSCAR statellite operations, are encouraged to join the OPS Nets. In the unlikely event that either the Net Control Station (NCS) or the alternate do not call on frequency, any participant is invited to act as the NCS.

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Slow Scan Television on A0-13

SSTV sessions will be held on immediately after the OPS Nets a downlink on a Mode-B downlink frequency 145.960 MHz.

/EX

SB SAT @ AMSAT \$ANS-275.04

WEEKLY OSCAR STATUS REPORTS

HR AMSAT NEWS SERVICE BULLETIN 275.04 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.04

Weekly OSCAR Status Reports: 01-OCT-93

A0-13: Current Transponder Operating Schedule:

L QST \*\*\* A0-13 TRANSPONDER SCHEDULE \*\*\* 1993 Aug 25-Oct 25

Mode-B : MA 0 to MA 90 !

Mode-BS : MA 90 to MA 120 !

Mode-S : MA 120 to MA 145 !<- S transponder; B trsp. is OFF

Mode-S : MA 145 to MA 150 !<- S beacon only

Mode-BS : MA 150 to MA 180 ! Blon/Blat 180/0

Mode-B : MA 180 to MA 256 !

Omnis : MA 230 to MA 40 ! Move to attitude 210/0, Oct 25

Continuous up-to-date information about A0-13 operations is always available on the beacons at 145.812 MHz and 2400.646 MHz in CW, RTTY and 400 bps PSK. Also, these bulletins are also posted to INTERNET, ANS bulletins, Packet, PACSATs, etc., and can also be found in many international newsletters. [G3RUH/DB20S/VK5AGR]

A0-16: Operating normally. [WH6I]

U0-22: Operating normally. [WH6I]

K0-23: K0-23 had an OBC crash earlier in the week and, while the KAIST Ground Controllers were working with their new satellite (K0-25) they had to cope with this bird's failure too. There was some difficulty in gaining control of the bird again, and in the process the RAM disk was lost. However, the BBS is now up and running and busy as usual. [WH6I]

I0-26: This new satellite has been heard and is sending some frames. WH6I has seen telemetry coming down at 1200 baud PSK format similar to that of A0-16. [WH6I]

The AMSAT NEWS Service (ANS) is looking for volunteers to contribute weekly OSCAR status reports. If you have a favorite OSCAR which you work on a regular basis and would like to contribute to this bulletin, please send your observations to WD0HHU at his CompuServe address of 70524,2272, on INTERNET at wd0hhu@amsat.org, or to his local packet BBS in the Denver, CO area, WD0HHU @ W0LJF.#NECO.CO.USA.NOAM. Also, if you find that the current set of orbital elements are not generating the correct AOS/LOS times at your QTH, PLEASE INCLUDE THAT INFORMATION AS WELL. The information you provide will be of value to all OSCAR enthusiasts.

/EX

SB SAT @ AMSAT \$ANS-275.05  
AMSAT-NA SPACE SYMPOSIUM INFO

HR AMSAT NEWS SERVICE BULLETIN 275.05 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.05

AMSAT-NA Space Symposium Set For 7-11 OCT In Arlington, TX

Arrangements are being finalized for the AMSAT-NA Annual Meeting and Space Symposium '93. The proceedings are at the printers and the speakers list is full (30 Speakers!). The Saturday evening Banquet Program has now been arranged and will be very entertaining. There is still time to register. Call AMSAT Headquarters at (301)589-6062 for registration. Pre-registration deadline is 1-OCT-93. Hotel reservations can be made at (800) 453-7909 or (817) 640-4142. Be sure to mention you are with AMSAT.

If you are coming to the Surplus Store Tour on 7 October, please be sure to indicate this. If you are driving to Arlington and can help provide transportation for Thursday and/or Friday evening please so indicate.

This promises to be one of the best Symposiums yet so don't miss it.  
See you in Arlington, TX, 7-10 October 93!

Keith Pugh, W5IU

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SB SAT @ AMSAT \$ANS-275.06  
ANS LANDLINE BBS

HR AMSAT NEWS SERVICE BULLETIN 275.06 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.06

Some Landline BBSs That Carry AMSAT News Service (ANS) Bulletins & KEPS

CompuServe's Hamnet  
Sysop: Scott Loftness (W3VS)  
<760703.407@CompuServe.COM>

Western Pacific BBS  
Phone #: 415-453-2854  
Up to 14,400bps V.32bis  
Sysop: Daniel C. Dufficy (KH8AF)  
>INTERNET:kh8af@crl.com

The ARRL BBS  
Phone #: 203-666-0578  
Sysop: Luck Hurder (KY1T)  
>INTERNET:lhurder@arrl.org

California Amatuer Radio Emergency Services (CARES) BBS  
Phone #: 916-323-4826  
Sacramento, CA  
Sysop: Gorden Fuller (WB6OVH)  
>INTERNET:GFULLER@SFOVMICI.VNET.IBM.COM

!!amsa@sats&stats!! bbs  
Phone #: 201-261-2780  
New Jersey  
Up to 14,400bps  
Sysop: Mel Roman (KA2UPD)  
>INTERNET:70712.1050@CompuServe.COM

HAM>LINK<RBBS  
Phone #: 612-426-0000  
Minnesota  
Up to 9600bps

Sysop: John Desmond (K0TG)  
>INTERNET:k0tg@amsat.org

OCA/AMSAT BBS  
Phone #: 714-738-4331  
Fullerton, CA  
UP to 14,400bps  
Sysop: John Wisniowski (N6DBF)  
>INTERNET:n6dbf@amsat.org  
or at CompuServe 70233,75

DRIG/AMSAT BBS  
Phone #: 214-394-7438  
Dallas, TX  
UP to 14,400bps  
Sysop: Jeff Wallach (N5ITD)

If you have a BBS and would like to join the AMSAT BBS Network, N6DBF would like to hear from you. I need to know the name of your BBS, Phone number, Location (city, state), Baud rate, Sysop's name and callsign, and your INTERNET and/or CompuServe address. Also, what AMSAT, ARRL, etc. files do you post each week.

Contact:

CompuServe at: 70233,75  
Internet at: >INTERNET:n6dbf@amsat.org  
or at N6DBF's callbook address

\* Please note: The AMSAT BBS Network is a telephone (BBS) network, not a packet (PBBS) network.

73, John Wisniowski (N6DBF)  
AMSAT NA, BBS Coordinator

/EX  
SB SAT @ AMSAT \$ANS-275.07  
G3IOR REPORTS ABOUT RS & MIR

HR AMSAT NEWS SERVICE BULLETIN 275.07 FROM AMSAT HQ  
SILVER SPRING, MD OCTOBER 1, 1993  
TO ALL RADIO AMATEURS BT  
BID: \$ANS-275.07

G3IOR Provides Some Interesting News About RS-10/11, RS-12/13 & MIR

The Russian RS-1 satellite, launched in October 1978 is now 15 years old, but still giving signals. It's battery went open circuit soon after launch, but the spacecraft's 29.401 MHz beacon can still be heard sending "55" when the solar cells are in full sunlight. Sadly, the power is

insufficient to provide that needed to operate the Mode-A transponder.

Nico Janssen (PA0DL0) recently visited the Radio Sputnik ground command station, meeting Leonid Labutin (UA3CR), his son Evgeny (RA3APR), Sergei Samburov (RV3DR), and the operators of RS3A. They passed on the following information on the satellites.

For a number of technical reasons, command problems, interference and the like, the radio amateur satellite systems RS 10/11 and RS 12/13 cannot presently be switched to modes other than those now in use. Consequently for the immediate future RS-10 may be expected to continue to operate in Mode-A (2M uplink and 10M downlink) and RS-12 in Mode-K (15M uplink and 10M downlink). RS-11 and RS-13 will remain switched off and in "standby" mode. The new Russian amateur satellite system RS-15 is now complete and ready for launch. It will be built into another Cosmos navigation satellite, similar to the navigation satellite Cosmos-2123 that houses RS-12/13. It is not known exactly when the launch of the satellite will occur, but as soon as an older satellite in this series of navigation satellites reaches the end of its operational life, the new satellite, with RS-15, will be launched.

There are now no plans for any further RS satellites after RS-15, and only project that the RS team is involved in is the voice experiment satellite VOXSAT. In this project the Russian team will work together with AMSAT-LU to build this amateur satellite system also to be built into a Russian satellite.

#### News on MIR

The present crew members of MIR, Vasily Tsibliyev and Aleksander Serebrov do not have personal amateur radio licenses, thus they do not have their own call signs while manning MIR. However, they do have permission to use the amateur radio station in MIR, using the general MIR call sign ROMIR for speech and ROMIR-1 for the onboard packet radio Personal Message System (PMS).

Since all Russian cosmonauts will now be given amateur radio training by Sergei (RV3DR) as a fixed part of their cosmonaut training, we may confidently expect the amateur radio station in MIR to be active continuously as long as cosmonauts are on board the space station. Future trained cosmonauts include Valeri Poliakov (U3MIR), Viktor Afanasyev (U9MIR) and Yuri Usachov (R3MIR).

Sergei (RV3DR) is only involved in training the Russian cosmonauts, so he recommends that western amateur radio organizations take care of the amateur radio training of the coming visiting cosmonauts preparing for a stay in MIR. Also, to make the amateur radio activity of a western cosmonaut in MIR as effective as possible Sergei suggests to have the



cosmonaut carry out a specific amateur experiment or take some new equipment to MIR, such as the microphone with voice memory taken by the German cosmonaut Flade.

Plans are afoot to change MIR's amateur radio equipment. In the future not only 2M but also 70cm and even 23cm operation can be expected. ATV equipment for use aboard the space station is presently being developed in Germany.

73, Pat, G3IOR @ GB7VLS

/EX

-----  
Date: Tue, 12 Oct 1993 15:35:52 GMT  
From: mdisea!mothost!schbbs!news@uunet.uu.net  
Subject: Archive for Satellite Info?  
To: ham-space@ucsd.edu

In article <1993Oct11.003906.16782@Princeton.EDU>, Jeffrey Puglielli  
<puglielli@phoenix.princeton.edu> says:

>  
>Can anyone point me in the direction of an archive site where I can find  
>a complete list of amateur satellites that includes modes, frequencies,  
>and other useful information? I'm particularly looking for info on those  
>satellites with digital capability; whether they use FSK, AFSK, PSK; and  
>the baud rate they operate at.

>  
>73s,  
>Jeff Puglielli, KD1FJ

Jeff,  
I do a lot of satellite tracking and get thoroughly confused all the time. I generated this table to attempt to keep me focussed while I'm tracking the bird. It didn't survive cutting and pasting over to my Windows-based usenet interface. So, hope you can use the data somehow. I have only listed the modes that are currently known to work on each of the birds. The operating frequencies for the newer birds (IO-26 through PO-28) are not fully rung out and their primary operating frequencies are not set at this time. (The term ALIAS is the packet name for the bird for digital modes. To access a digital bird, you would connect to it as PACSAT-11 in PB and PACSAT-12 in PG, for example.)

Good luck.  
Ned Stearns AA7A

Sat Name	(ALIAS)	Uplink Freq	Dwnlink Freq	Mode
A0-10		435.05>.15	145.95>.85	Mode B Linear inv xponder
-----				
U0-11				
145.826	Beacon			
-----				
RS-10		145.86>.90	29.36>.40	Mode A Linear xponder
29.357/.404	Beacon/Robot			
-----				
RS-12		21.21>.25	29.41>.45	Mode K Linear xponder
29.408/.454	Beacon/Robot			
-----				
A0-13		435.45>.55	145.95>.85	Mode B Linear inv xponder
		435.62	2400.73	Mode S Linear xponder
		145.812		Beacon
		2400.325/.664		Beacon
-----				
A0-16 (PACSAT)		145.90/.92/.94/.96	437.051	Mode J 1200 Baud PSK
-----				
D0-17		145.825		Beacon
-----				

Date: 12 Oct 93 22:28:58 GMT  
 From: ogicse!news.tek.com!gvgpsa.gvg.tek.com!gold.gvg.tek.com!gvgadg!  
 randyh@network.ucsd.edu  
 Subject: Weather Sat Info Needed  
 To: ham-space@ucsd.edu

I am thinking about receiving weather satellite pictures from the NOAA

series birds on 137 MHz. I think I am all set on the receiving end, but need some ideas for the decoder of the 2400 Hz tone into pictures. Seems like someone must sell a simple decoder that would connect to a PC (Mac would be neat as well) that would decode and display on the computer's screen. Does anyone know of such a converter? A simple kit with software would be great.

If anyone has any ideas, please pass them on. Also any Telnet or FTP sites with info would also be useful.

Thanks,

Randy  
WA2AGE

-----  
Date: 12 Oct 93 13:09:27 GMT  
From: ogicse!uwm.edu!vixen.cso.uiuc.edu!uchinews!milo.mcs.anl.gov!  
chbmac01.el.anl.gov!user@network.ucsd.edu  
Subject: Where is the NASA type Sat Data?  
To: ham-space@ucsd.edu

In article <chbeck-111093113018@chbmac01.el.anl.gov>, chbeck@anl.gov (Chuck Beck) wrote:

> (Sorry for the (old) question but) -- just where can I get  
> new (or current) NORAD/NASA 2- Line Satellite Data from via  
> internet?  
>  
> Is there a conversion program from the AMSAT format?  
>  
> (Could someone e-mail me a new set?)  
>  
> Thanks--  
> de W09K  
>

I should have waited- I see someone posted the new data, and where to get it. Thanks to those who did.

Now for the next question... All I have is a 2mtr sideband/cw rig, and a 10m setup. I successfully worked RS10 last night. It was fun. What other satellites can I work with this setup? Is there info on the others as to what freqs they support? FAQ? thanks.

-----

"If I told you all that went down, it would burn off both your ears..."  
-Robert Hunter/Jerry Garcia

-----  
These thoughts are only my own. CHBeck@anl.gov  
-----

Date: 12 Oct 93 13:36:47 GMT  
From: ogicse!emory!wa4mei!ke4zv!gary@network.ucsd.edu  
To: ham-space@ucsd.edu

References <1993Oct9.171123.7950@ke4zv.atl.ga.us>,  
<1993Oct11.231450.3158@scubed.com>, <29ctcc\$o5r@nntp.ucs.ubc.ca>  
Reply-To : gary@ke4zv.UUCP (Gary Coffman)  
Subject : Re: Lindenblad Antenna

In article <29ctcc\$o5r@nntp.ucs.ubc.ca> davem@rflab.ee.ubc.ca (Dave Michelson)  
writes:

>In article <1993Oct11.231450.3158@scubed.com>,  
>James R. Duffey <ji3m@scubed.com> wrote:  
>>

>>The Lindenblad is a neat way to generate circular  
>>polarization and was initially developed by Lindenblad at  
>>RCA to reduce ghosting on TV and FM from skyscrapers in  
>>New York City.

>  
>Without going into great detail, the notion that use of CP antennas reduces  
>multipath fading is largely wishful thinking on the part of Kraus and  
>others.

>  
>In an ideal setting where the ground is a \*perfect\* conductor, the  
>sense of the multipath wave is indeed reversed while its ellipticity  
>remains unchanged. In practice, incidence often occurs below the  
>Brewster angle and the sense of the multipath wave is \*NOT\* reversed.  
>Similarly, the ellipticity of the multipath wave is rarely preserved  
>on reflection.

>  
>There was certainly a great deal of interest in the use of CP antennas  
>to reduce multipath in TV during the late 1970's and early 1980's.  
>The NAB Conference Proceedings and IEEE Transactions on Broadcasting  
>contain quite a few papers on the subject. In practice, the results  
>were extremely disappointing and the matter was quickly abandoned.

You're about half right. We use a Harris CP antenna, and it does  
not improve the ghosting situation. But the reasons why it doesn't  
are that the viewers don't have CP antennas, so they get no rejection  
effect, and because of multiple reflections. The circularity sense  
reverses with each reflection, so a double reflection is the same

as no reflection at all because the sense is now back to that of the original signal. The reason we use CP anyway is that it works better with rabbit ears than a straight horizontally polarized signal.

Ground reflections aren't the real issue. Most of the reflections that cause ghosting are from buildings, water tanks, metal light poles, and the like. They do give a clean reversal in most cases, but that doesn't matter if the consumer isn't running an antenna that can discriminate against signals of the opposite circularity.

We make extensive use of CP for our mobile microwave relays used in newsgathering. There, with CP antennas on both ends, we can achieve marked reductions in ghosting. We also often take deliberate advantage of multipath by aiming our antennas at a common high obstruction, such as a tall building. By switching the receive antenna to the reverse sense, we can often get clean pictures from the reflection when the direct path is a mess of ghosts.

Gary

--

Gary Coffman KE4ZV	"If 10% is good enough	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	for Jesus, it's good	uunet!rsiatl!ke4zv!gary
534 Shannon Way	enough for Uncle Sam."	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-Ray Stevens	

-----

Date: 12 Oct 1993 21:56:46 GMT

From: dog.ee.lbl.gov!agate!howland.reston.ans.net!sol.ctr.columbia.edu!destroyer!  
nntp.cs.ubc.ca!unixg.ubc.ca!rflab.ee.ubc.ca!davem@network.ucsd.edu

To: ham-space@ucsd.edu

References <1993Oct11.231450.3158@scubed.com>, <29ctcc\$o5r@nntp.ucs.ubc.ca>,  
<1993Oct12.133647.20217@ke4zv.atl.ga.us>avem

Subject : Re: Lindenblad Antenna

In article <1993Oct12.133647.20217@ke4zv.atl.ga.us>,

Gary Coffman <gary@ke4zv.UUCP> wrote:

>>>

>>>The Lindenblad is a neat way to generate circular  
>>>polarization and was initially developed by Lindenblad at  
>>>RCA to reduce ghosting on TV and FM from skyscrapers in  
>>>New York City.

>>

>>Without going into great detail, the notion that use of CP antennas reduces  
>>multipath fading is largely wishful thinking on the part of Kraus and  
>>others.

>

>You're about half right.

I wish that was the case. If CP antennas worked as well as some people have suggested they do, the world would be a much happier place.

However, I have yet to see any experimental results which show that use of CP antennas will \*routinely\* reduce multipath interference as simple theory suggests. The hard evidence is lacking.

When CP transmitting antennas were introduced into the FM broadcasting service, it was (as you suggest) mostly so that vertical (mobile) and horizontal (fixed) receiving antennas would pick up the signals about equally well.

When CP transmitting antennas were introduced into the TV broadcasting service, the principal justification was the anticipated reduction in multipath interference. None of the field trial reports that \*I\* ever saw were very convincing. When the principal proponent of the idea died (Sikola (sp?) of RCA (?)), the whole thing was abandoned.

About the same time, there was a lot of interest in using CP antennas to eliminate multipath interference in microwave positioning systems used in marine navigation and surveying. (So-called "range" holes are a \*real\* problem in such systems.) Del Norte Technologies conducted some preliminary field trials and concluded that, contrary to expectations, use of CP antennas offered no real improvement.

>We use a Harris CP antenna, and it does  
>not improve the ghosting situation. But the reasons why it doesn't  
>are that the viewers don't have CP antennas, so they get no rejection  
>effect,

Obviously.

>and because of multiple reflections. The circularity sense  
>reverses with each reflection, so a double reflection is the same  
>as no reflection at all because the sense is now back to that of  
>the original signal. The reason we use CP anyway is that it works  
>better with rabbit ears than a straight horizontally polarized  
>signal.

Agreed. (see above.)

In certain situations, I'm sure that CP antennas will work as simple theory suggests. In the vast majority of cases, especially the example used by Kraus in "Antennas" 2nd ed., (p. 870), they will not.

>Ground reflections aren't the real issue. Most of the reflections  
>that cause ghosting are from buildings, water tanks, metal light  
>poles, and the like. They do give a clean reversal in most cases,  
>but that doesn't matter if the consumer isn't running an antenna  
>that can discriminate against signals of the opposite circularity.

>We make extensive use of CP for our mobile microwave relays used  
>in newsgathering. There, with CP antennas on both ends, we can  
>achieve marked reductions in ghosting. We also often take deliberate  
>advantage of multipath by aiming our antennas at a common high  
>obstruction, such as a tall building. By switching the receive  
>antenna to the reverse sense, we can often get clean pictures  
>from the reflection when the direct path is a mess of ghosts.

More than ever, I can see a real need for some CCIR type studies to  
guide those who wish to employ CP in terrestrial systems...

Thanks for the reply, Gary. If you have anything more to add or  
any reports/papers that you care to recommend, I'll be very happy  
to hear about them.

Ever the skeptic...

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Dave Michelson  
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